UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/587,727 | 06/05/2000 | Nandu Gopalakrishnan | 2-11-6 | 7894 |

46290 7590 08/05/2005

WILLIAMS, MORGAN & AMERSON/LUCENT
10333 RICHMOND, SUITE 1100
HOUSTON, TX 77042

| EXAMINER | |
|---|---|
| BURD, KEVIN MICHAEL | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2631 | |

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Application Number: 09/587,727
Filing Date: June 05, 2000
Appellant(s): GOPALAKRISHNAN ET AL.



Mark W. Sincell, Ph.D.
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 5/25/2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) Status of Claims**

The statement of the status of the claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

| | | |
|---|---|---|
| 5,541,595 | MEYER | 7-30-1996 |
| 5,233,348 | POLLMAN et al | 8-3-1993 |
| 20010012271 | BERGER | 8-9-2001 |
| 6,411,799 | PADOVANI | 6-25-2002 |

**(9) Grounds of Rejection**

The following grounds of rejection are applicable to the appealed claims:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-4, 10-13, 28-31 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (US 5,541,595) in view of Pollman et al (US 5,233,348) further in view of Berger (US 2001/0012271).

Regarding claims 1, 10, 28 and 37, Meyer discloses a method of encoding messages (column 1, lines 31-45). The messages are separated into groups as shown in table 1. Table 1 shows messages (CODES) S1, S2, S3, S4, S5 and S6 and their associated Huffman code. S1, S2 and S3 are converted into 2 bit messages. This is a first group. S5 and S6 are converted into 4 bit messages. This is a second group. The number of messages in the first group is unequal to the number of messages in the second group. These messages (Huffman codes) will be transmitted (column 2, lines 11-16).

Meyer does not disclose the second group of messages is based on a prior transmitted message. However, Pollman discloses, "Huffman coding is an optimum statistical coding procedure capable of approaching the theoretical entropy limit, given prior knowledge of the probability of all possible events. The encoder can generate such probability distributions and send them to the decoder prior to transmission of a given frame. This table is used to derive Huffman code words where relatively short code words are assigned to events with the highest probability of occurrences." This is disclosed in column 7 lines 24-38 of Pollman. Therefore, the probability distribution is sent to the decoder prior to the transmission of the messages (frame) and the grouping based on probability is based on the distribution found in this transmission.

Since Pollman discloses fundamental components of Huffman coding, it would have been obvious for one of ordinary skill in the art at the time of the invention to include the teachings of Pollman in the coding system of Meyer. Pollman simply elaborates on necessary information for Huffman codes to function properly.

The combination stated above does not discloses the encoded data is a rate request signal. Berger discloses transmitting a rate request signal is useful to change the present rate of data being transmitted (paragraph 0011). It would have been obvious for one of ordinary skill in the art to include the teachings of Berger into the combination of Meyer and Pollman. By changing the transmission rate via a rate request signal, the data is received properly from the destination. Berger states "this rate is more than the destination can handle and results in either loss of data at the private destination network or a requirement that the private destination network include high speed buffers to receive data that arrives too fast for the private destination to route." (paragraph 0009). These deficiencies are overcome by the teachings of Berger (paragraph 0010).

Regarding claims 2, 11 and 29, Meyer discloses a first number of bits (two) are used to represent messages in the first group, which is different than a second number of bits (four) used to represent messages in the second group as shown in table 1.

Regarding claims 3, 12 and 30, Meyer discloses a message from the first group has a higher probability of being transmitted than a message from the second group since codes having high probabilities of occurrence are converted into Huffman codes of short bit length as stated in column 2, lines 11-16).

Regarding claims 4, 13 and 31, Meyer discloses the number of bits used to represent messages in the first group is lower than the number of bits used to represent messages in the second group since codes having high probabilities of occurrence are converted into Huffman codes of short bit length as stated in column 2, lines 11-16).

2. Claims 5-9, 14-17, 32-36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (US 5,541,595) in view of Pollman et al (US 5,233,348) further in view of Berger (US 2001/0012271) further in view of Padovani (US 6,411,799).

Regarding claims 5, 14, 32 and 38, Meyer discloses a method of encoding messages (column 1, lines 31-45). The messages are separated into groups as shown in table 1. Table 1 shows messages (CODES) S1, S2, S3, S4, S5 and S6 and their associated Huffman code. S1, S2 and S3 are converted into 2 bit messages. This is a first group. S5 and S6 are converted into 4 bit messages. This is a second group. The number of messages in the first group is unequal to the number of messages in the second group. These messages (Huffman codes) will be transmitted (column 2, lines 11-16). The first and second messages are based on the current state of the system so that the messages have the highest probability of occurring. If these probabilities changed, so would the coding.

Meyer does not disclose the second group of messages is based on a prior transmitted message. However, Pollman discloses, "Huffman coding is an optimum statistical coding procedure capable of approaching the theoretical entropy limit, given prior knowledge of the probability of all possible events. The encoder can generate such probability distributions and send them to the decoder prior to transmission of a given frame. This table is used to derive Huffman code words where relatively short code words are assigned to events with the highest probability of occurrences." This is disclosed in column 7 lines 24-38 of Pollman. Therefore, the probability distribution is

sent to the decoder prior to the transmission of the messages (frame) and the grouping based on probability is based on the distribution found in this transmission.

Since Pollman discloses fundamental components of Huffman coding, it would have been obvious for one of ordinary skill in the art at the time of the invention to include the teachings of Pollman in the coding system of Meyer. Pollman simply elaborates on necessary information for Huffman codes to function properly.

The combination stated above does not discloses the encoded data is a rate request signal. Berger discloses transmitting a rate request signal is useful to change the present rate of data being transmitted (paragraph 0011). It would have been obvious for one of ordinary skill in the art to include the teachings of Berger into the combination of Meyer and Pollman. By changing the transmission rate via a rate request signal, the data is received properly from the destination. Berger states "this rate is more than the destination can handle and results in either loss of data at the private destination network or a requirement that the private destination network include high speed buffers to receive data that arrives too fast for the private destination to route." (paragraph 0009). These deficiencies are overcome by the teachings of Berger (paragraph 0010).

The combination above does not disclose the first group is transmitted at a different power than the second group. However, it is obvious for one of ordinary skill in the art at the time of the invention to know that any group with fewer bits will be transmitted at lower power than a message with more bits. This is shown in column 1, lines 60-65 of Padovani. Padovani states a system increases capacity by transmitting

fewer bits thereby using less power. It requires power to transmit a bit and the fewer that are transmitted, the less power will be used.

Regarding claims 6, 15 and 33, Meyer discloses a first number of bits (two) are used to represent messages in the first group, which is different than a second number of bits (four) used to represent messages in the second group as shown in table 1.

Regarding claims 7, 16 and 34, Meyer discloses a message from the first group has a higher probability of being transmitted than a message from the second group since codes having high probabilities of occurrence are converted into Huffman codes of short bit length as stated in column 2, lines 11-16).

Regarding claims 8, 9, 17, 35 and 36, Meyer discloses the number of bits used to represent messages in the first group is lower than the number of bits used to represent messages in the second group since codes having high probabilities of occurrence are converted into Huffman codes of short bit length as stated in column 2, lines 11-16).

**(10) Response to Argument**

A. Claims 1-4, 10-13 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (US 5,541,595) in view of Pollman et al (US 5,233,348) further in view of Berger (US 2001/0012271).

Appellants submit that the prior art of record provides no suggestion or motivation for identifying at least a first plurality of messages indicative of a corresponding first plurality of data transmission rates and a second plurality of messages indicative of a corresponding second plurality of data transmission rates as

set forth in claim 1. Appellants submit that the prior art of record provides no suggestion or motivation for identifying at least a first group of messages having a first plurality of transmit rate request messages and a second group of messages having a second plurality of transmit rate request messages as set forth in claims 10 and 37.

As stated above in the grounds of rejection, the combination of Meyer and Pollman discloses a method of encoding messages, comprising the steps of: identifying at least a plurality of messages and a second plurality of messages based on a prior transmitted message, where the first plurality of messages are unequal: and transmitting a message from one of at least the first and second plurality of messages. The combination of Meyer and Pollman discloses fixed length data signals are encoded by varying bit lengths according to the frequency of occurrence of the value to be encoded (Meyer: column 1, lines 25-45). If a signal has a high probability of occurrence, the signal will be converted to a Huffman code of a short bit length as shown in table 1 of Meyer. If a signal has a low probability of occurrence, that signal will be encoded using Huffman codes into a code with a longer bit length shown in table 1 of Meyer. Pollman teaches Huffman encoding and states it is advantageous to compress digital television signals to minimize the amount of data to be transmitted (column 1, lines 35-37). The combination of Meyer and Pollman does not disclose the information that is encoded using the variable rate Huffman coding is messages indicative of corresponding pluralities of data transmission rates or transmit rate request messages.

Berger discloses transmitting rate request signals to change the present rate of data being transmitted in the communication system as stated in paragraphs 0011 and 0012.

The combination of Meyer, Pollman and Berger allows these rate request signals to be Huffman encoded so that the most likely rate request signals to be transmitted will be transmitted using the smallest bit length shown in table 1 of Meyer. Systems using Huffman coding will reduce the amount of data transmitted as compared to fixed length encoding systems. Since less data is sent, the number of errors occurring in the transmission will be reduced. By transmitting rate request signals and implementing these new transmission rates in the communication system, high speed buffers used to receive data that arrives to fast for the destination to route would be eliminated (Berger: paragraphs 0009 and 0010). This would reduce the cost of the receiving destination circuitry.

For these reasons and the reasons stated in the previous office actions, the examiner respectfully requests that the examiner's rejections for claims 1-4, 10-13 and 37 under 35 U.S.C. 103(a) be affirmed.

B. Claims 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (US 5,541,595) in view of Pollman et al (US 5,233,348) further in view of Berger (US 2001/0012271).

Appellants submit that the prior art of record is completely silent with regard to identifying a second group of messages having a second plurality of messages based on a current system state as set forth in independent claim 28.

As stated above in the grounds of rejection, the combination of Meyer and Pollman discloses a method of encoding messages (Meyer: column 1, lines 31-45). The messages are separated into groups as shown in table 1 of Meyer. Table 1 shows messages (CODES) S1, S2, S3, S4, S5 and S6 and their associated Huffman code. S1, S2 and S3 are converted into 2 bit messages. This is a first group. S5 and S6 are converted into 4 bit messages. This is a second group. The number of messages in the first group is unequal to the number of messages in the second group. Pollman states "Huffman coding is an optimum statistical coding procedure capable of approaching the theoretical entropy limit, given prior knowledge of the probability of all possible events." (column 7, lines 24-27). The first and second messages are based on the current system state of the system (the probability of the possible events at that time). If these probabilities change, so will the coding.

Appellants recite an example of the current system state. However, this limitation is not recited in the rejected claims 28-31. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

For these reasons and the reasons stated in the previous office actions, the examiner respectfully requests that the examiner's rejections for claims 28-31 under 35 U.S.C. 103(a) be affirmed.

C. Claims 5-9, 14-17 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (US 5,541,595) in view of Pollman et al (US 5,233,348) further in view of Berger (US 2001/0012271) further in view of Padovani (US 6,411,799).

Appellants state the examiner relies on Padovani to teach that a message with fewer bits may be transmitted at lower power than a message with more bits. However, Padovani fails to remedy the aforementioned deficiencies of the other cited references. The discussion of the other cited references is stated above in the response to argument under heading A, regarding claims 1-4, 10-13 and 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (US 5,541,595) in view of Pollman et al (US 5,233,348) further in view of Berger (US 2001/0012271).

For these reasons and the reasons stated in the previous office actions, the examiner respectfully requests that the examiner's rejections for claims 5-9, 14-17 and 38 under 35 U.S.C. 103(a) be affirmed.

D. Claims 32-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (US 5,541,595) in view of Pollman et al (US 5,233,348) further in view of Berger (US 2001/0012271) further in view of Padovani (US 6,411,799).

Appellants state the examiner relies on Padovani to teach that a message with fewer bits may be transmitted at lower power than a message with more bits. However, Padovani fails to remedy the aforementioned deficiencies of the other cited references. The discussion of the other cited references is stated above in the response to

argument under heading B, regarding claims 28-31 rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (US 5,541,595) in view of Pollman et al (US 5,233,348) further in view of Berger (US 2001/0012271).

For these reasons and the reasons stated in the previous office actions, the examiner respectfully requests that the examiner's rejections for claims 32-36 under 35 U.S.C. 103(a) be affirmed.

**(11) Related Proceedings Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

KEVIN BURD
PRIMARY EXAMINER

Kevin M. Burd

Conferees:

Mohammed Ghayour

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER

Stephen Chin

STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600